

(No Model.)

4 Sheets—Sheet 1.

H. GRUSON.
ARMOR TURRET.

No. 376,985.

Patented Jan. 24, 1888.

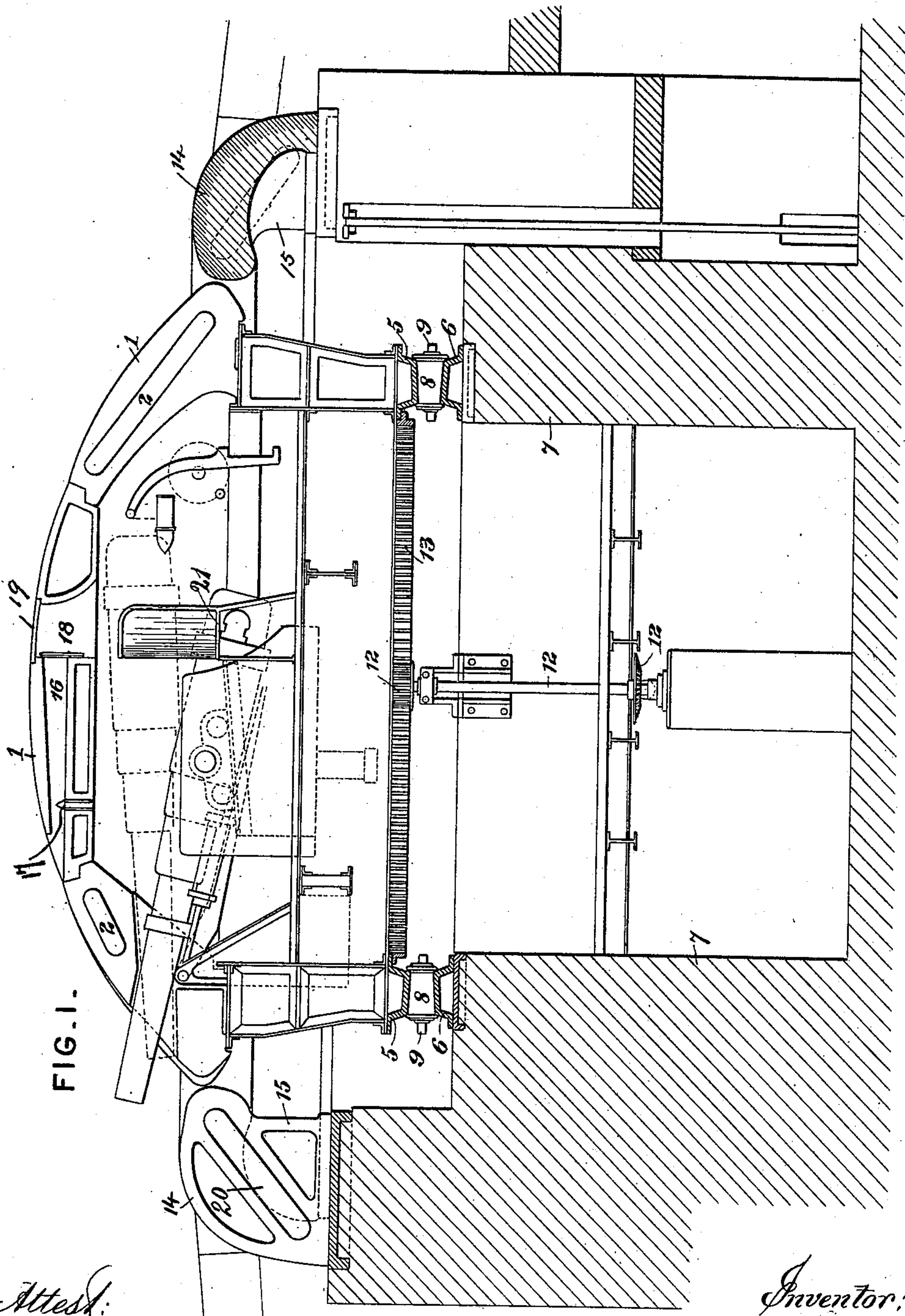


FIG. 1.

Attest:
Geo. T. Smallwood
Samuel H. Knight.

Inventor:
Hermann Gruson.
By Knight Bros
attys

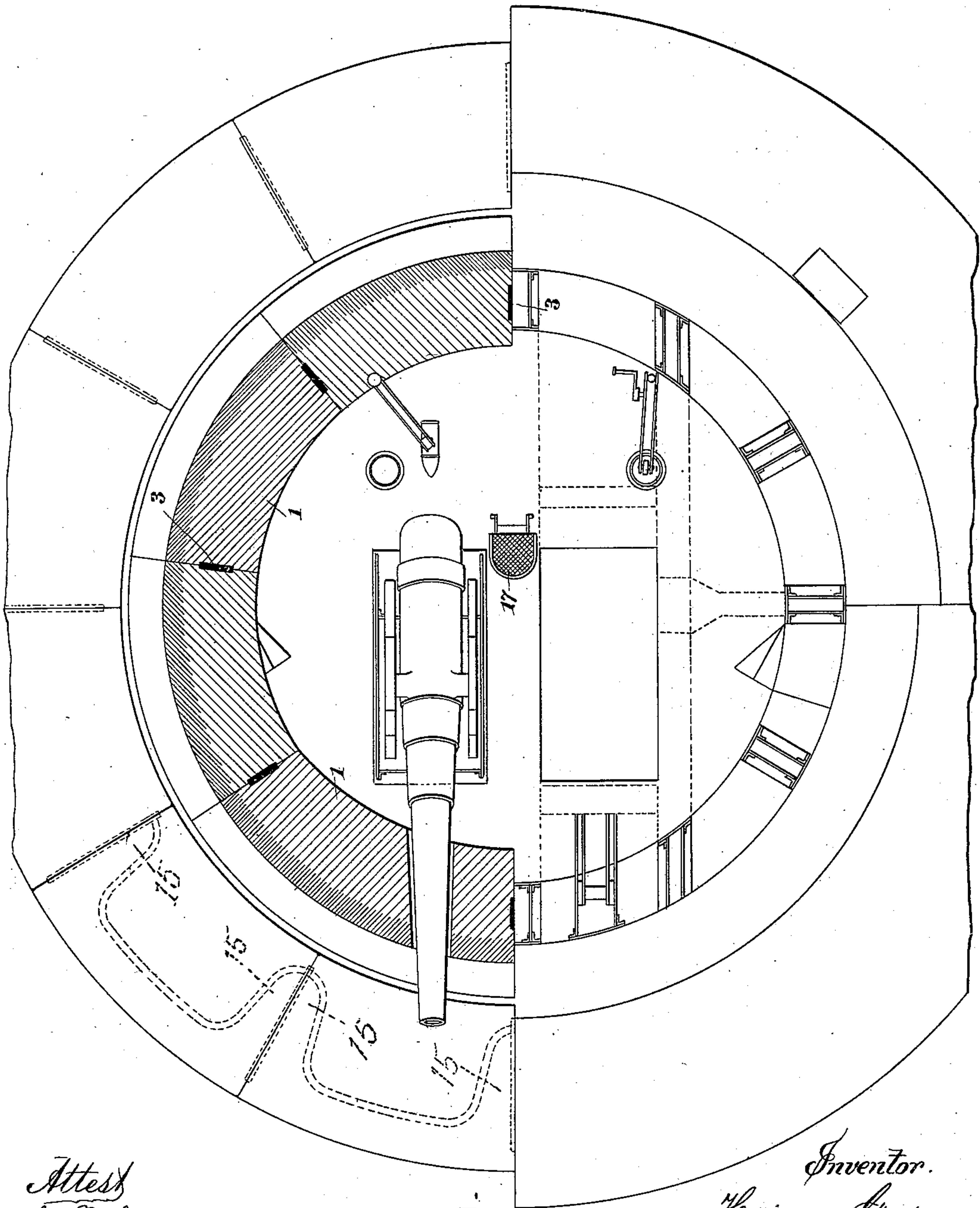
(No Model.)

4 Sheets—Sheet 2.

H. GRUSON.
ARMOR TURRET.

No. 376,985.

Patented Jan. 24, 1888.



Attest
Geo. T. Smallwood.
Samuel H. Knight.

FIG. II.

Inventor.
Hermann Gruson.
By *Knight & Sons*
attys

(No Model.)

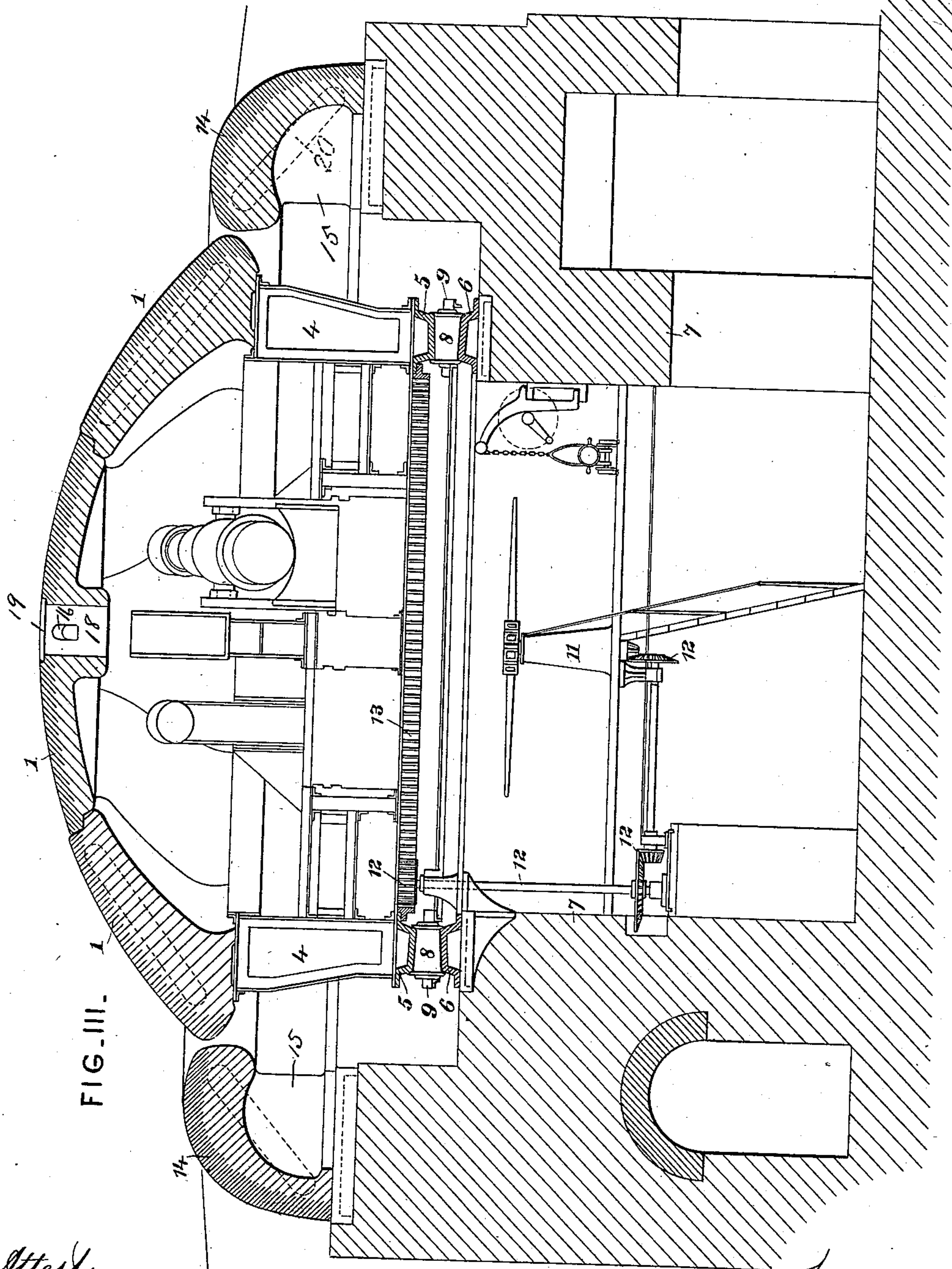
4 Sheets—Sheet 3.

H. GRUSON.

ARMOR TURRET.

No. 376,985.

Patented Jan. 24, 1888.



Attest:

Geo. T. Smallwood.
Samuel H. Knight.

Inventor:

Hermann Gruson.

By Knight & Co.
attys

(No Model.)

H. GRUSON.

4 Sheets—Sheet 4.

ARMOR TURRET.

No. 376,985.

Patented Jan. 24, 1888.

FIG. IV.

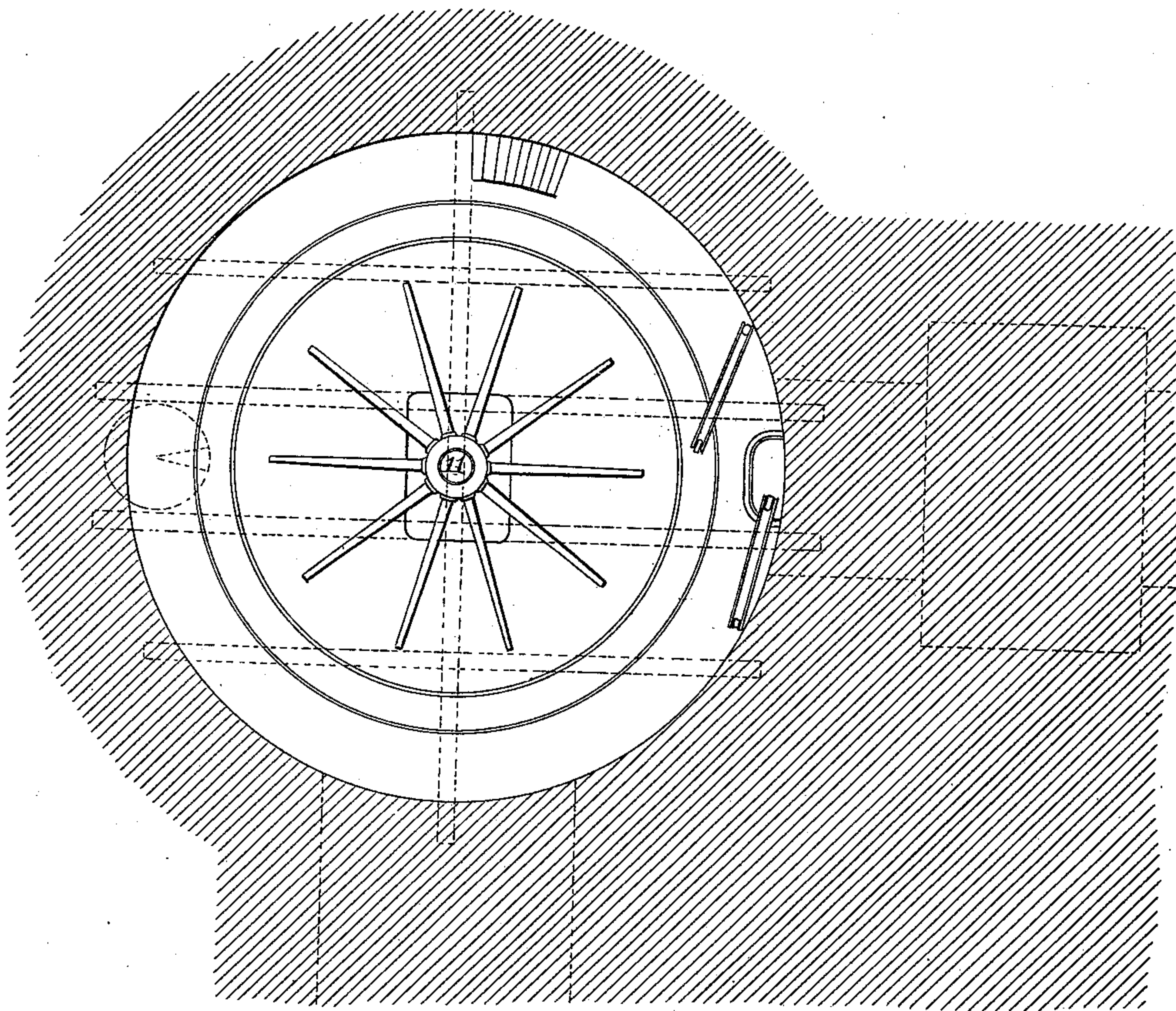
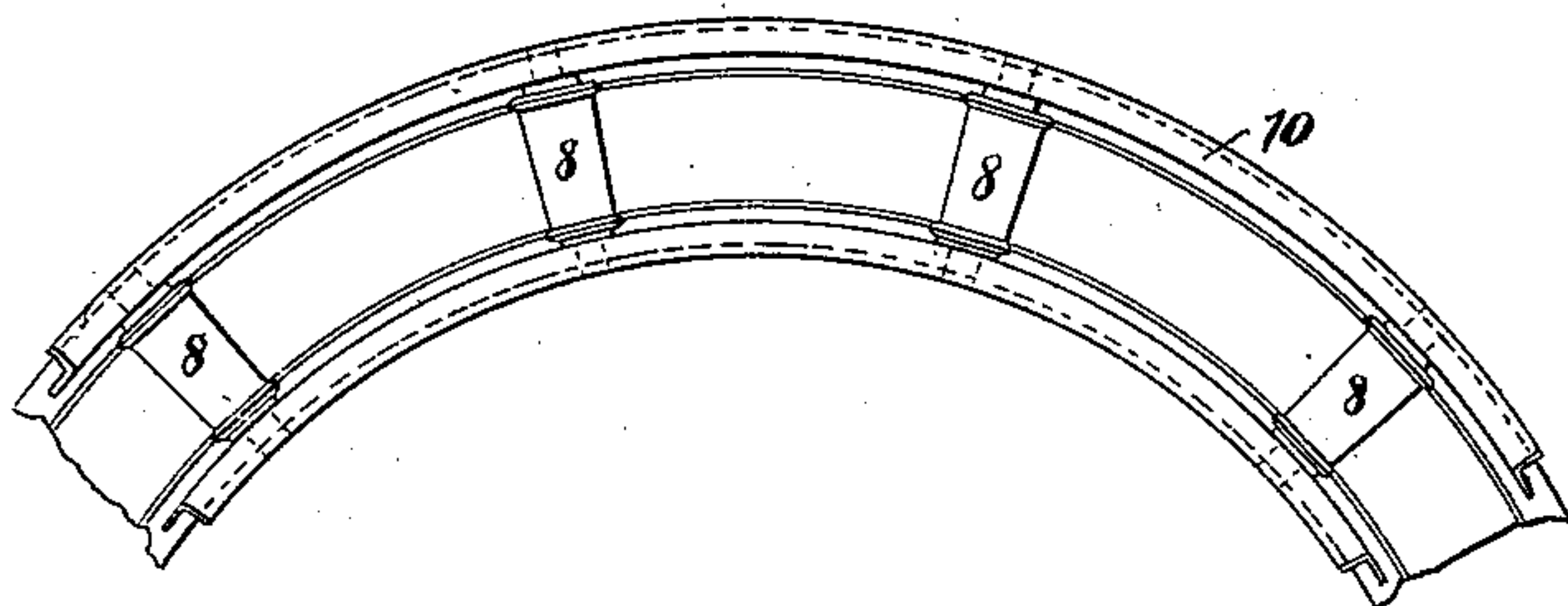


FIG. V.



Attest:

Geo. P. Smallwood.
Samuel H. Knight.

Inventor:

Hermann Gruson.
By Knight & Co.
attys

UNITED STATES PATENT OFFICE.

HERMANN GRUSON, OF BUCKAU, PRUSSIA, GERMANY.

ARMOR-TURRET.

SPECIFICATION forming part of Letters Patent No. 376,985, dated January 24, 1888.

Application filed February 1, 1886. Serial No. 190,501. (No model.)

To all whom it may concern:

Be it known that I, HERMANN GRUSON, a subject of the King of Prussia, residing at Buckau, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Armor-Turrets, of which the following is a specification.

The present invention has for its object the formation of a turret in separate sections, so constructed and arranged as to dispense with the use of bolts and nuts in fastening them together. To this end the plates or sections of the turret or casing are of cast-iron, cast in a chilled mold in such manner that the outer surface will be hard and the inner soft. Shots striking a turret whose exterior is of hard chilled iron will rebound more readily than from a more yielding surface, and by casting the sections they may be made with curved surfaces and radial divisions. This form renders it possible to mount the plates without any means of connection, as they rest one on the other exactly in the manner of the stones of an arch, so maintaining themselves in place by their own weight. Even when fractured by the balls from an enemy's guns they will not fall apart, but each part of a plate will form in itself a stone in the arch, for the reason that, as is well known, chilled cast-iron under impact breaks in radial directions.

In order to raise the power of resistance by distributing the shocks on one plate or section over the whole turret as much as possible, iron connecting fins or plates are arranged loosely between the abutting faces of the sections. For sighting, one (preferably the key-section of the turret) is made with a horizontal opening, which may be closed by a door, and under this opening a stand or platform for the marksman is arranged.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a vertical section of a turret embodying my improvements. Fig. II is a horizontal sectional view of the turret in two planes. Fig. III is a vertical sectional view taken in a plane at right angles to that shown in Fig. I. Fig. IV is a plan view of the op-

erating-platform. Fig. V is a sectional detail view of the carriage on which the turret rests.

The turret is made up of a number of sections, 1, cast in a chill-mold, so as to have hardened outer surfaces, and having radial sides, so that when joined together, as shown, they will form an arch or dome and be retained together by their own weight. This I do not herein claim, broadly. The sections may be solid, as shown in Fig. III, or hollow, as shown in part of Fig. I. The plates or sections are in Fig. I shown in elevation, and in Fig. III in section.

In the abutting surfaces of the several sections are formed recesses or grooves 2, which are filled by loose metal plates or fins 3 when placing the sections in position. These connections between the plates or sections of the turret render the whole more united and distribute a shock upon any section over the entire turret. To adapt them for this purpose, of course the plates 3 must exactly fill the recesses 2 provided for them.

The turret is supported upon an annular foundation, 4, of sheet-iron plates bolted or riveted together. At its base the foundation 4 has a bearing-plate, 5, preferably of the form shown in cross-section in Figs. I and III and corresponding in shape to the track 6, fixed to the masonry 7 and serving as support for the rollers 8, on which the turret and its rotary foundation are supported. The rollers 8 have trunnions 9 to rest in boxes in a ring, 10, whereby they are retained in proper relative positions.

The turning of the turret is effected by capstan 11, whose movement is communicated by gears 12 to an interiorly-toothed ring, 13, fixed to the foundation 4. With heavy turrets steam-power would be used ordinarily for rotating the turret, and the capstan would serve only in case of necessity, as when the engine should become disabled.

To protect the foundation of the turret, a ring-formed shield, 14, of armor-plates is provided. These plates are cast and placed together in substantially the same manner as the plates of the turret itself. To increase the stability of this shield-ring and increase the superficial area of the abutting ends, each of the plates

is cast at each end and on its inner side with one or more flanges or posts, 15. A top view of these flanges or posts is shown by dotted lines in Fig. II and in elevation in Fig. I. It will be seen that the plates proper are but little thicker at top than at bottom, their outer surfaces being constructed on a curve including about ninety degrees of a circle, so that the bottom of the plate will be about vertical, its outer surface gradually receding until at top it is (substantially) horizontal. A protecting ring or armor thus formed possesses many advantages over a simple annular ring rising vertically from the ground and of uniform thickness from top to bottom. It will be understood that this ring is designed to be protected by earth-work, so that only its top projects, and hence it is not essential that its bottom should be as strong as the top. By causing the top edge of the plate to project inward in a substantially horizontal plane the thickness of metal exposed to fire is as great as if the ring were of equal thickness from top to bottom, while a great saving of metal is effected by making the bottom part of this ring of the shape shown. It is obvious that short ring-sections of this peculiar shape would not stand alone, because the entire lower edge or base falls upon one side of the center of gravity, and therefore, in order to form a proper support for them, each plate is formed (preferably) at each end with a flange or post, 15, which gives the plate the appearance of being of quadrant shape when viewed from the end. These plates being secured together by fins or separate plates fitting loosely in corresponding grooves formed in their abutting ends, it becomes important to form these flanges or posts 15 flush with the ends of the plates, so that the grooves for the reception of the key-plates may be made straight and of the requisite size. One of these grooves is shown at 20.

In Patent No. 295,246, granted to Gruson and Schumann, an armor-ring is shown constructed of three plates of the same general shape in cross-section as those herein shown and described, but differing therefrom in that in the former the legs, posts, or flanges 15 are not employed. This is because the necessity for them does not exist, each plate being made to embrace so many degrees of a circle that its base or bottom edge falls upon both sides of the center of gravity.

The turret is provided with one or two guns whose carriages are arranged in any desired manner—as, for example, that shown in United States Patent No. 295,245 or 281,643. The elevation of the gun is regulated by raising or lowering the breech end of the barrel, the pivotal point being near the port. The lateral direction is, on the contrary, determined by turning the entire turret. To enable the sighting of the gun, therefore, there is provided in the roof or key-plate of the turret a radial aperture, 16, in which is a sight, 17.

I am aware that armor-turrets have been provided with rotary observation-domes having sight-apertures, and do not claim such, broadly, as my invention. These domes as heretofore constructed consist of hollow structures placed on top of the turret, within which the gunner sits. In one device of this character of which I am aware the observation-dome is nearly severed from the body of the turret by a horizontal slot provided for enabling the marksman to sweep the horizon with a telescope pivoted centrally within the dome. The portion above this slot is joined with the lower part of the structure only by narrow strips of metal, the construction being such that the least shock would completely sever it. All of the observation-domes of which I am aware are superstructures, (within which the marksman sits or stands,) which make very good targets for the enemy.

The object of my invention is to provide an observation-aperture which requires no superstructure, does not weaken the turret itself, and completely protects the marksman. To this end the turret is made very low—only projecting sufficiently above the surface of the surrounding ground to enable the necessary vertical sweep of the gun—and as nearly flat as possible, so that a ball striking it will glance off. The key-plate or roof is curved very slightly and the observation-aperture 16 formed therein, not through the plate from side to side, but in a direction substantially parallel with the inner and outer surfaces thereof, terminating in a vertical aperture or “man-hole,” 18, formed therethrough from side to side. It is true that this aperture or man-hole 18 is much larger than the sight-aperture, being designed to admit the head and shoulders of the marksman; but then it does not materially weaken the plate at the part which is exposed to fire. It is preferably in rear of the highest part of the roof, as shown in the drawings. The gunner may, if he sees fit, project his head through this aperture and take observations; but having once learned the direction of the enemy, he may cover the opening with a trap-door, 19, and make his observations through the sight-aperture 16, within which is placed a fixed sight, 17. It will thus be seen that the key-plate or roof is not materially weakened by an observation-aperture of this character. Immediately under the aperture 16 in the turret is a protected platform for the marksman.

It is understood that the arrangement of the mechanism for handling the ammunition and the other details of the turret may be as represented, or otherwise, as desired.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. An armor-turret having a substantially horizontal sky-plate, an observation-aperture formed in said plate in a horizontal direction, and a man-hole, into which said aperture opens, substantially as set forth.

2. An armor-turret having a substantially horizontal sky-plate, an observation-aperture, 16, formed in said plate and terminating in an enlarged aperture or man-hole, 18, formed vertically through said plate, substantially as set forth.

5 3. An armor-turret having a substantially horizontal sky-plate, an observation-aperture, 16, formed in said plate, extending between its

top and bottom sides, a fixed sight, 17, located in said aperture, and an enlarged aperture or man-hole, 18, into which said observation-aperture opens, substantially as set forth.

HERMANN GRUSON.

Witnesses:

JOHN VIEWEG,
EMIL KALLNECKER.